

# **TOPICAL REPORT CSTC TOPIC 2003-E**

## **CHEMICAL EXPOSURES DURING CLOSURE ACTIVITIES**

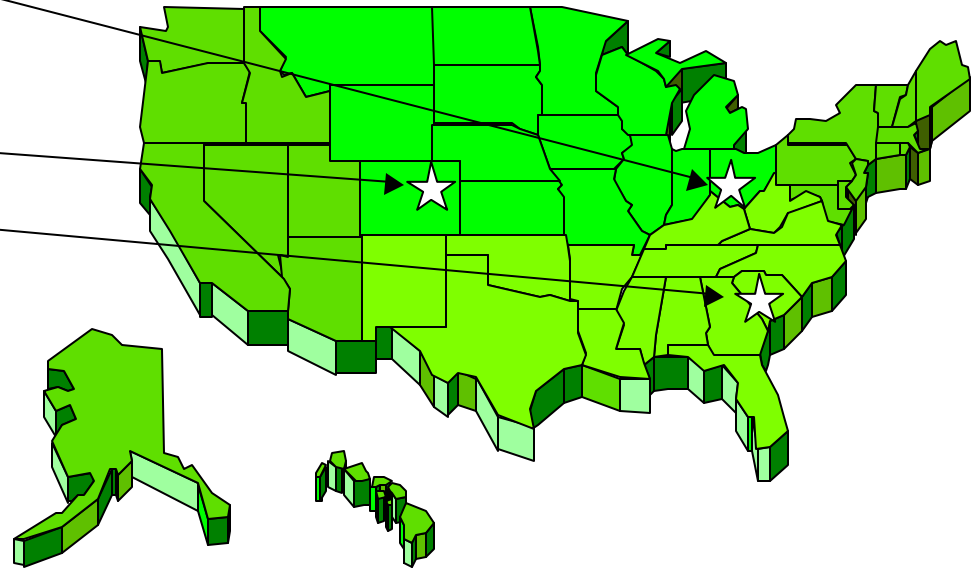
**M.S. Colalancia, CIH, RFETS**

# The Team

- Marco S. Colalancia, CIH -- Chair, RFETS
- Billy Lee - DOE HQ Sponsor
- Geoffrey Gorsuch DOE-OH
- Jenelle Morris, RFETS
- L.P. Singh, DOE-SRS
- Sally Starling, WSRC-SRS
- Fred Simmons, WSRC-SRS

# Project Overview

- Ohio Area Office Projects
- Rocky Flats Environmental Technology Site
- Savannah River Site



# Chemical Regulatory Taxonomy

	DOE	Contractor
Statutes, Regulations	10 CFR 850, 29 CFR 1960 FEOSH	10 CFR 850, 29 CFR 1910, 1926 Gen. Ind. Std.
Directives, Guides	DOE O 440.1/DOE G 440.1-1/ DOE-G-440.1-3	
Site Program Interpretation	HAZCOM, HAZWOPER	
Closure Lifecycle Activities	Specific Exposure Standards PELs, STELs, TLVs	

# Closure Lifecycle Activities

- Containerized Chemical Removal
- Decontamination
- Surveillance and Maintenance
- Decommissioning
- Demolition
- Soil Remediation

# Closure Lifecycle Activities

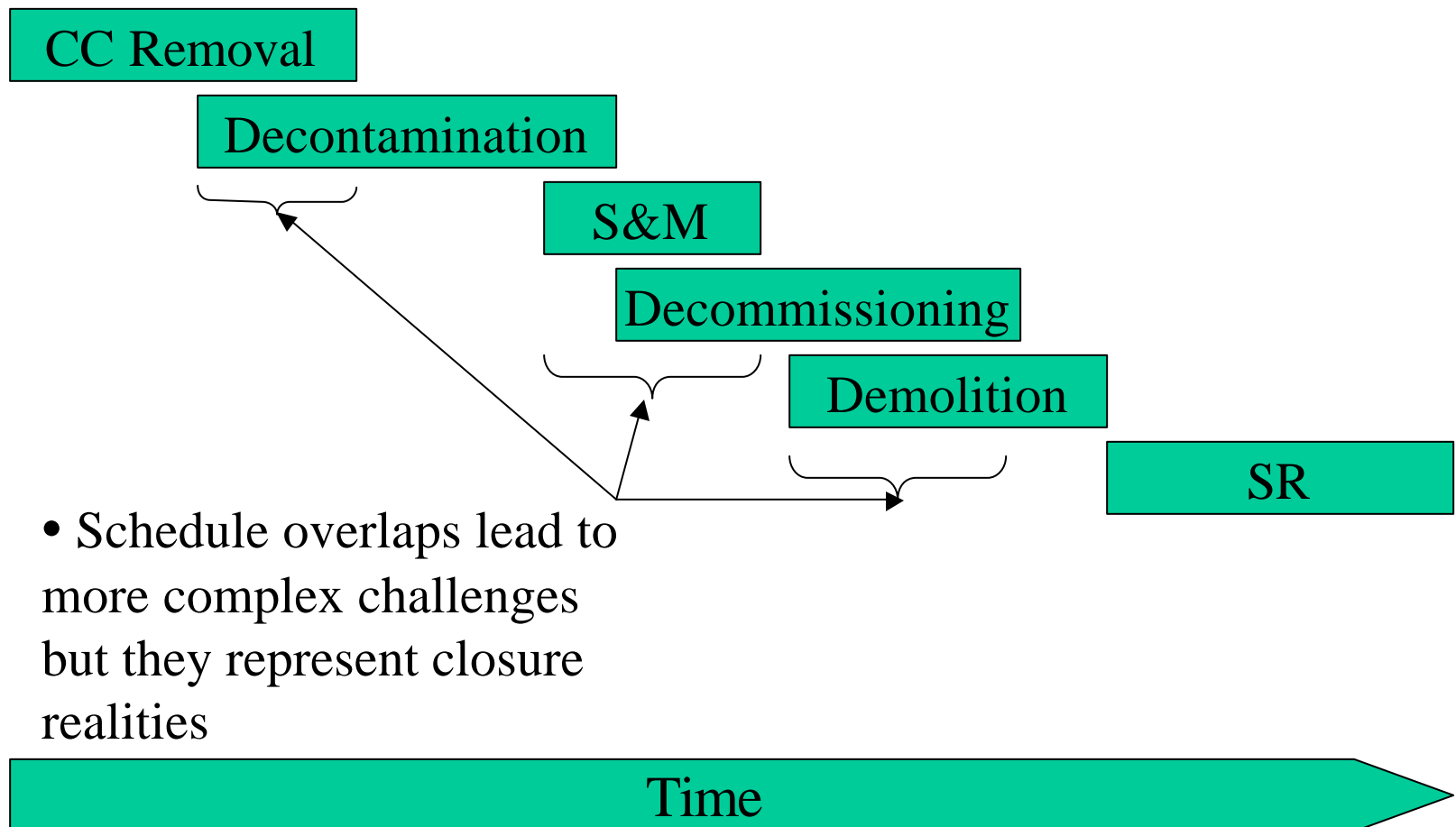
- Containerized Chemical Removal
- Decontamination
- Surveillance and Maintenance

> Easy-to-Manage  
Chemical Exposure  
Potentials  
(Worker Risk)

- Decommissioning
- Demolition
- Soil Remediation

> Difficult-to-Manage  
Chemical Exposure  
Potentials  
(Greater Worker Risk)

# Closure Lifecycle Activities



# Other Challenges

- Contract Reform Initiatives
- Prototypical Work Tasks
- Experience Gap
- Characterization Activities
- Work Orchestration



# Case Study Collection

- Case Studies were:
  - obtained for each lifecycle area where possible
  - reviewed for common themes
  - Chemical Exposure Management Practices were revealed
    - Good Exposure Minimization Practices
    - Practices to Avoid

# Case Studies - CC Removal

## 2 Examples

- Packaging Lead Acid Batteries at FCP
- Hand Sorting and Preparation of Drummed Mixed Waste

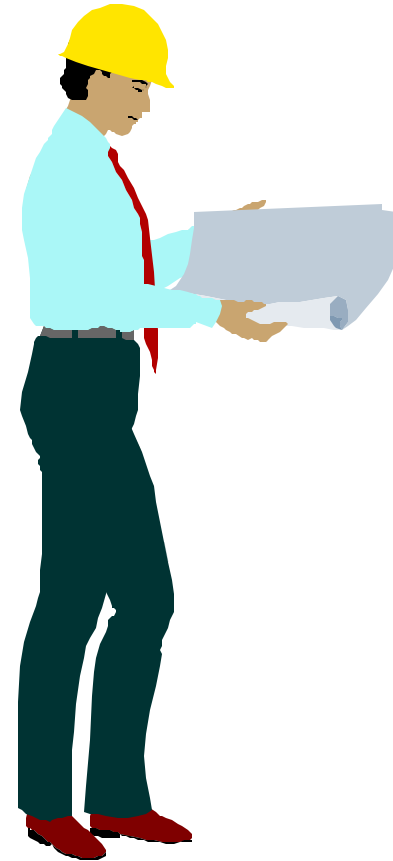
# Case Studies - Decontamination

## 3 Examples

- Building 771 System 22 Draining and Process Pipe Removal
- InstaCote Oversized LLW to transport oversized objects to Disposal Facilities
- Dismantlement and Demolition of a Decommissioned Uranium Refinery Building

# Case Studies - S & M/ Decommissioning

- No examples of exposure sampling during surveillance and maintenance (S&M)
- Prior sampling experience indicates that routine S&M activities are generally low-hazard, although a few exceptions exist
- Decommissioning activity case studies not yet reviewed



# Cast Studies - Demolition

## 3 Examples

- Size Reduction of 1950's Era Uranium Metals Processing Building
- Torch-Cutting Task During Heavy Water Facility Demolition at SRS
- Torch-Cutting Task during River Boat Dock Demolition at the SRS

# Case Studies - Soil Remediation

## 3 Examples

- Waste Pit Excavation and Soil/Debris Processing
- Washing of Uranium Contaminated Soil
- Soil/Debris Excavation and Deposition at an On-Site Spill Disposal Facility

# Conclusions

- Successful Exposure Minimization Practices:
  - Decontaminate objects/structures/equipment prior to decommissioning or demolition
  - Use engineering controls, e.g., ventilation and containment to reduce likelihood of personnel exposures.
  - Be conservative in choosing Personal Protective Equipment until sampling results warrant reduction in protection
  - Provide adequate planning time for closure activities
  - Provide administrative controls where necessary.

# Conclusions

- Practices to avoid
  - Hasty work planning
  - Manually handling contaminated items
  - Reducing Personal Protective Equipment regimens without verifiable sampling results
  - Using Personal Protective Equipment in lieu of addressing engineering control inadequacies
  - Working on any closure activity without the benefit of adequate characterization data



# Conclusions

- Closure Activities differ from DOE Operations with respect to personnel available to support information gathering activities
- Time-tested, successful exposure minimization practices do work
- Additional Case Study information should continue to be gathered to provide an experience-based resource to DOE.

# Acknowledgements

## Sponsors

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- Billy Lee, DOE-HQ

## Team members - Outstanding Contribution

- Geoffrey Gorsuch, DOE-OH